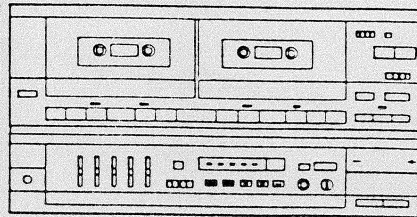


Service Manual



ORDER NO.
ARP 1303-A

STEREO DOUBLE CASSETTE TAPE DECK AMPLIFIER

DC-X88Z

MODEL DC-X88Z COMES IN FIVE VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Power requirement	Export destination
HB	AC 220V, 240V (switchable)	United kingdom
HE	AC 220V, 240V (switchable)	European continent
HEZ	AC 220V, 240V (switchable)	West Germany
YP	AC 240V only	Australia
SD	AC 110V, 120-127V, 220V, 240V (switchable)	General market

- This service manual is applicable to the HB type.
- As to the other types, please refer to additional service manual.
- Ce manuel d'instruction se réfère au mode de réglage, en français.
- Este manual de servicio trata del método ajuste escrito en español.

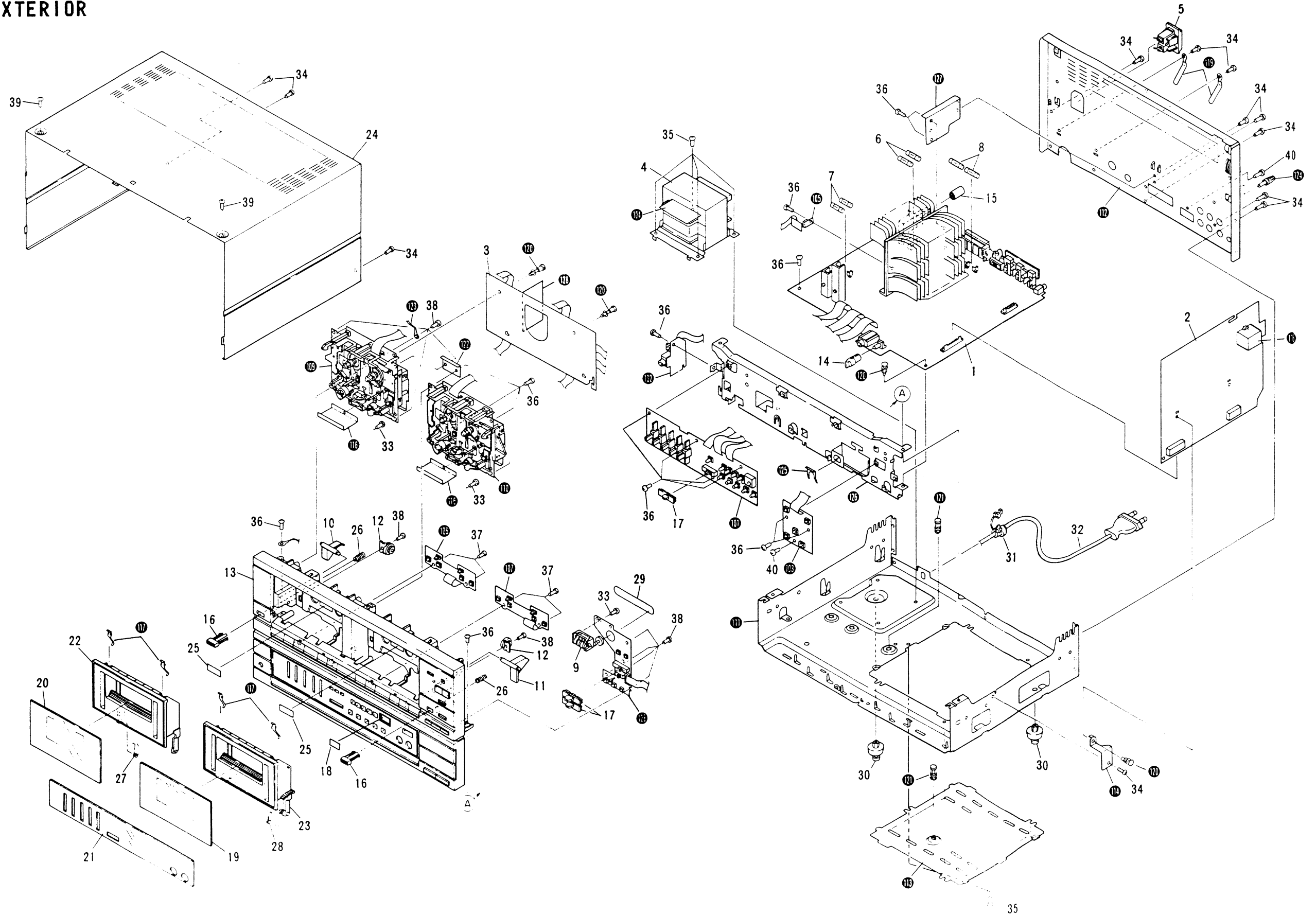
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PIONEER ELECTRONIC CORPORATION 4-1, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS SERVICE INC. P.O. Box 1760, Long Beach, California 90801 U.S.A. TEL: [213] 835-6177
PIONEER ELECTRONICS OF CANADA, INC. 505 Cochrane Drive, Markham, Ontario L3R 6B8 Canada TEL: [416] 479-4411
PIONEER ELECTRONIC [EUROPE] N.V. Keetberglaan 1, 2740 Beveren, Belgium TEL: 03/775-28-08
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia TEL: [03] 580-9911

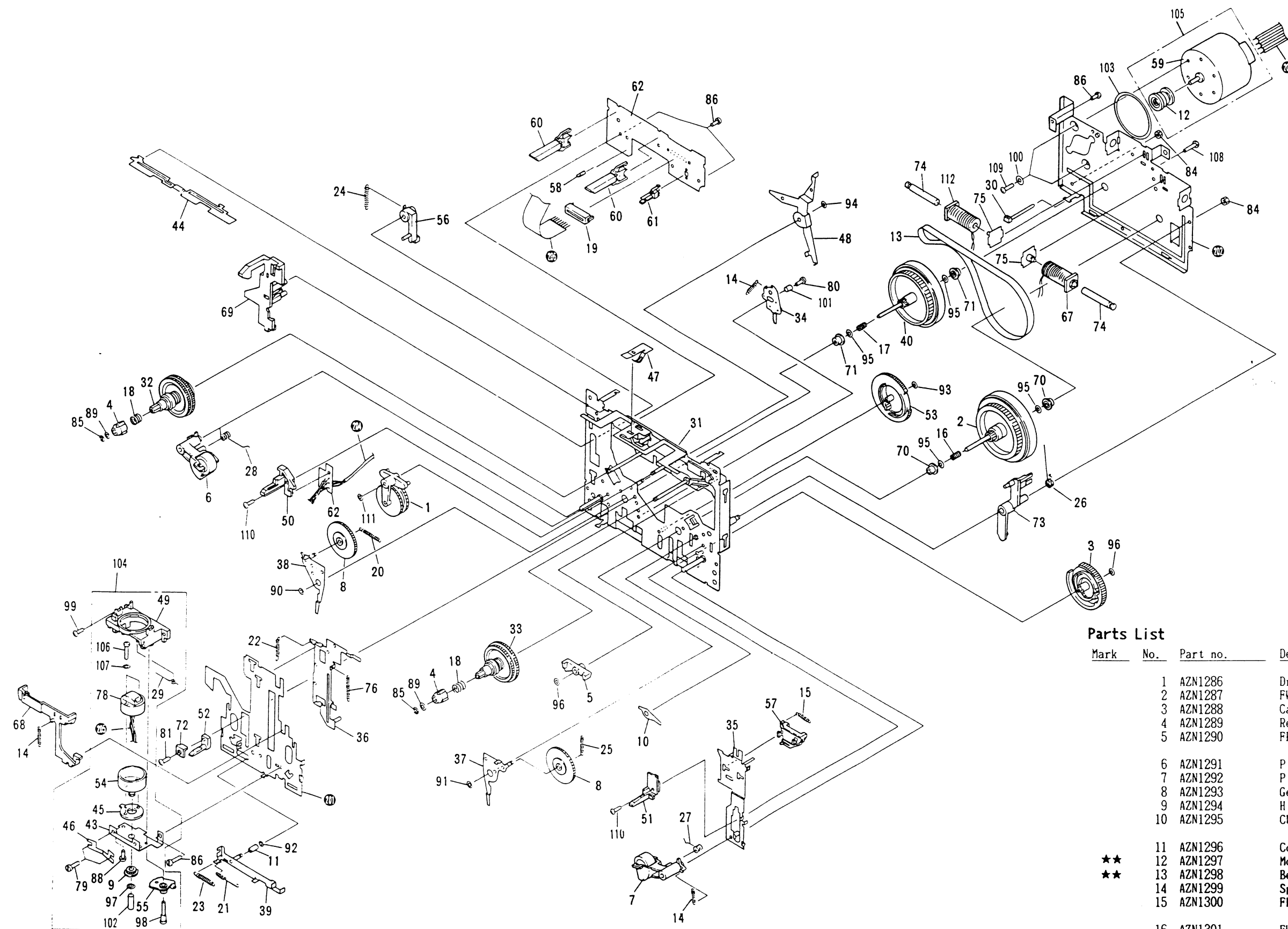
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3. EXPLODED VIEWS AND PARTS LIST 3.1 EXTERIOR



DC-X88Z

3.2 MECHANISM UNIT I

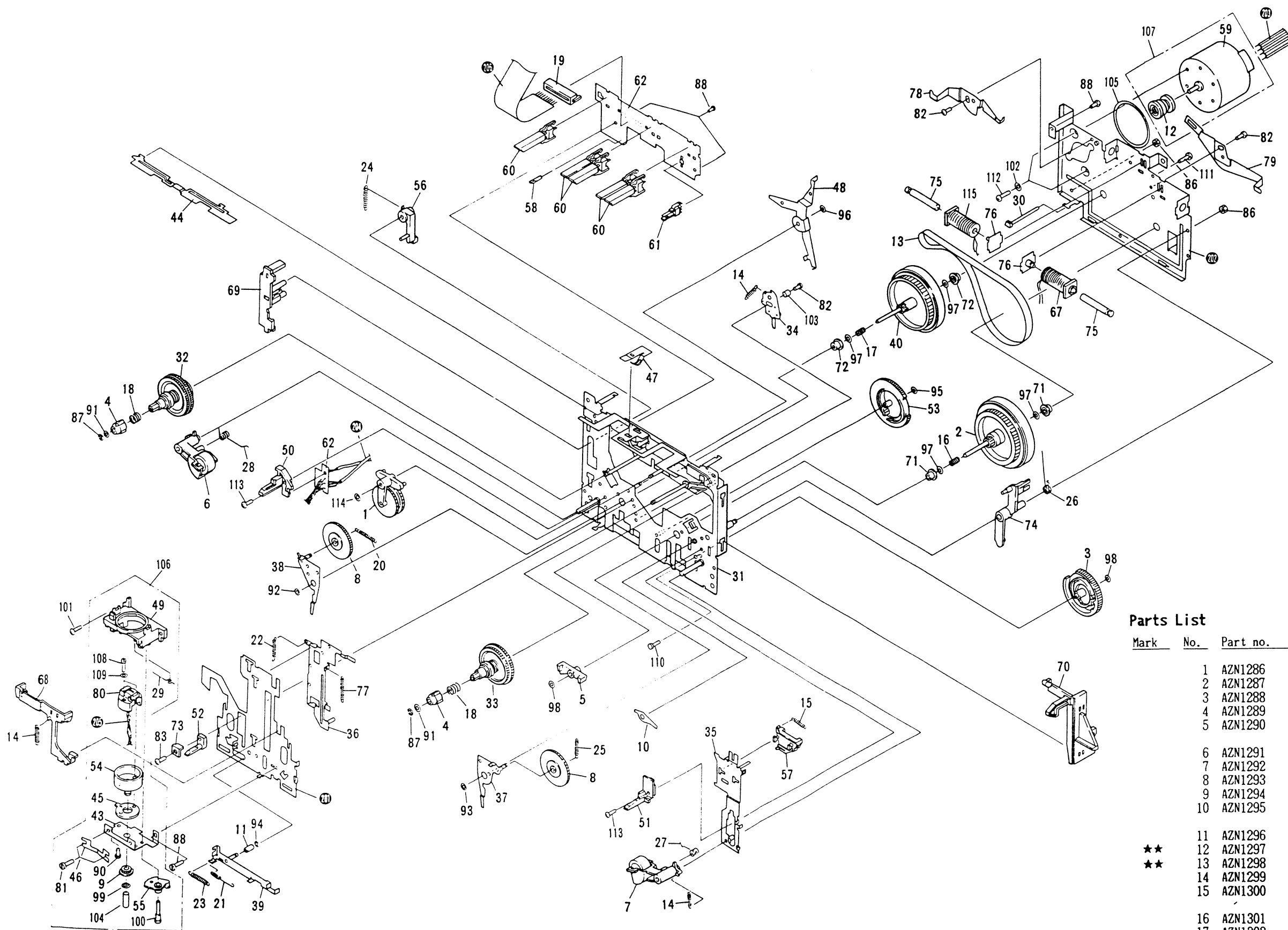


Parts List

Mark	No.	Part no.	Description
	1	AZN1286	Drive arm assembly
	2	AZN1287	FW assembly A
	3	AZN1288	Cam gear
	4	AZN1289	Reel stopper
	5	AZN1290	FR arm
	6	AZN1291	P arm L assembly
	7	AZN1292	P arm R assembly
	8	AZN1293	Gear A
	9	AZN1294	H gear
	10	AZN1295	CUE arm
★★	11	AZN1296	Collar C
★★	12	AZN1297	Motor pulley
★★	13	AZN1298	Belt
	14	AZN1299	Spring
	15	AZN1300	FR lever spring
	16	AZN1301	FWF spring
	17	AZN1302	FWR spring
	18	AZN1303	Spring
	19	AZN1305	Cable holder
	20	AZN1306	Spring

	Mark	No.	Part no.	Description		Mark	No.	Part no.	Description
A		21	AZN1307	Spring			71	AZN1347	Metal
		22	AZN1308	Spring			72	AZN1348	Cushion
		23	AZN1309	Spring			73	AZN1349	Trigger arm
		24	AZN1310	Spring		★	74	AZN1350	Solenoid
		25	AZN1311	Spring			75	AZN1351	Solenoid plate assembly
		26	AZN1312	Spring			76	AZN1352	Spring
		27	AZN1313	Spring			77		.....
		28	AZN1314	Spring			78	AZP1015	PLAY head
		29	AZN1315	Spring			79	AZB1079	Stopper A
		30	AZN1316	Nylon band			80	AZB1080	Screw
B		31	AZN1318	Chassis assembly			81	AZB1081	Screw
		32	AZN1319	R reel assembly			82		.....
		33	AZN1320	F reel assembly			83		.....
		34	AZN1321	Reverse arm assembly			84	AZB1084	Nut
		35	AZN1322	FR lever assembly			85	AZB1085	E ring
		36	AZN1323	PLAY lever assembly			86	AZB1086	Screw
		37	AZN1324	Gear arm R assembly			87		.....
		38	AZN1325	Gear arm L assembly			88	AZB1089	Screw
		39	AZN1326	Head lever assembly			89	AZB1090	Washer
		40	AZN1327	FW assembly			90	AZB1091	Oil stop washer
C		41		.....			91	AZB1092	Oil stop washer
		42		.....			92	AZB1093	Washer
		43	AZN1328	Azimuth plate			93	AZB1094	Washer
		44	AZN1329	Switch arm			94	AZB1095	Washer
		45	AZN1330	Head arm			95	AZB1096	Washer
		46	AZN1331	Azimuth spring			96	AZB1097	Washer
		47	AZN1332	Cassette holder			97	AZB1098	Washer
		48	AZN1333	PLAY trigger			98	AZB1099	Screw
		49	AZN1334	Head frame			99	AZB1100	Screw
		50	AZN1335	Cassette guide (L)			100	AZB1087	Washer
D		51	AZN1336	Cassette guide (R)			101	AZB1088	Collar
		52	AZN1337	Cassette guide			102	AZN1317	Tube
		53	AZN1338	Cam gear			103	AZN1304	Spacer
		54	AZN1339	Head holder			104	AZP1017	Head frame assembly
		55	AZN1340	Head gear		★★	105	AZX1014	Motor assembly
		56	AZN1341	Eject arm			106	AZB1101	Screw
		57	AZN1342	Select lever			107	AZB1102	Spring washer
	★★	58	AZE1018	Hole IC			108	AZB1104	Screw
	★★	59	AZX1013	Motor			109	AZB1105	Screw
	★★	60	AZS1033	Leaf switch			110	AZB1106	Screw
	★★	61	AZS1034	Leaf switch			111	AZB1107	Washer
		62	AZN1354	P plate			112	AZS1036	Bobbin
		63		.....				
		64		.....			201		Head board
		65		.....			202		Fly wheel holder
							203		Jumper
		66		.....			204		Head lead
		67	AZS1035	Bobbin			205		Lead wire
		68	AZN1343	Brake			206		Lead wire
		69	AZN1353	Latch lever (L)					
		70	AZN1346	Metal					

3.3 MECHANISM UNIT II



Parts List

Mark	No.	Part no.	Description
	1	AZN1286	Drive arm assembly
	2	AZN1287	FW assembly A
	3	AZN1288	Cam gear
	4	AZN1289	Reel stopper
	5	AZN1290	FR arm
	6	AZN1291	P arm L assembly
	7	AZN1292	P arm R assembly
	8	AZN1293	Gear A
	9	AZN1294	H gear A
	10	AZN1295	CUE arm
★ ★	11	AZN1296	Collar C
★ ★	12	AZN1297	Motor pulley
★ ★	13	AZN1298	Belt
	14	AZN1299	Spring
	15	AZN1300	FR lever spring
	16	AZN1301	FWF spring
	17	AZN1302	FWR spring
	18	AZN1303	Spring
	19	AZN1305	Cable holder
	20	AZN1306	Spring

Mark	No.	Part no.	Description	Mark	No.	Part no.	Description
	21	AZN1307	Spring		71	AZN1346	Metal
	22	AZN1308	Spring		72	AZN1347	Metal
	23	AZN1309	Spring		73	AZN1348	Cushion
	24	AZN1310	Spring		74	AZN1349	Trigger arm
	25	AZN1311	Spring	★	75	AZN1350	Solenoid
	26	AZN1312	Spring		76	AZN1351	Solenoid plate assembly
	27	AZN1313	Spring		77	AZN1352	Spring
	28	AZN1314	Spring		78	AZN1356	Arm eject (L)
	29	AZN1315	Spring		79	AZN1357	Arm eject (R)
	30	AZN1316	Nylon band		80	AZP1014	REC/PLAY/ERASE head
	31	AZN1318	Chassis assembly		81	AZB1079	Stopper A
	32	AZN1319	R reel assembly		82	AZB1080	Screw
	33	AZN1320	F reel assembly		83	AZB1081	Screw
	34	AZN1321	Reverse arm assembly		84		.....
	35	AZN1322	FR lever assembly		85		.....
	36	AZN1323	PLAY lever assembly		86	AZB1084	Nut
	37	AZN1324	Gear arm R assembly		87	AZB1085	E ring
	38	AZN1325	Gear arm L assembly		88	AZB1086	Screw
	39	AZN1326	Head lever assembly		89		.....
	40	AZN1327	FW assembly		90	AZB1089	Screw
	41		.....		91	AZB1090	M nut
	42		.....		92	AZB1091	Washer
	43	AZN1328	Azimuth plate		93	AZB1092	Oil stop washer
	44	AZN1329	Switch arm		94	AZB1093	Oil stop washer
	45	AZN1330	Head arm		95	AZB1094	Washer
	46	AZN1331	Azimuth spring		96	AZB1095	Washer
	47	AZN1332	Cassette holder		97	AZB1096	Washer
	48	AZN1333	PLAY trigger		98	AZB1097	Washer
	49	AZN1334	Head frame		99	AZB1098	Washer
	50	AZN1335	Cassette guide (L)		100	AZB1099	Screw
	51	AZN1336	Cassette guide (R)		101	AZB1100	Screw
	52	AZN1337	Cassette guide		102	AZB1087	Washer
	53	AZN1338	Cam gear		103	AZB1088	Collar
	54	AZN1339	Head holder		104	AZN1317	Tube
	55	AZN1340	Head gear		105	AZN1304	Spacer
	56	AZN1341	Eject arm		106	AZP1016	Head frame assembly
★★	57	AZN1342	Select lever	★★	107	AZX1014	Motor assembly
★★	58	AZE1018	Hole IC		108	AZB1101	Screw
★★	59	AZX1013	Motor		109	AZB1102	Spring washer
★★	60	AZS1033	Leaf switch		110	AZB1103	Screw
★★	61	AZS1034	Leaf switch		111	AZB1104	Screw
	62	AZN1355	P plate		112	AZB1105	Screw
	63		.....		113	AZB1106	Screw
	64		.....		114	AZB1107	Washer
	65		.....		115	AZS1036	Bobbin
	66		.....		201		Head board
	67	AZS1035	Bobbin		202		Fly wheel holder
	68	AZN1343	Brake		203		Jumper
	69	AZN1344	Eject lever (L)		204		Head lead
	70	AZN1345	Eject lever (R)		205		Lead wire
					206		Lead wire

D



1

2

3

4

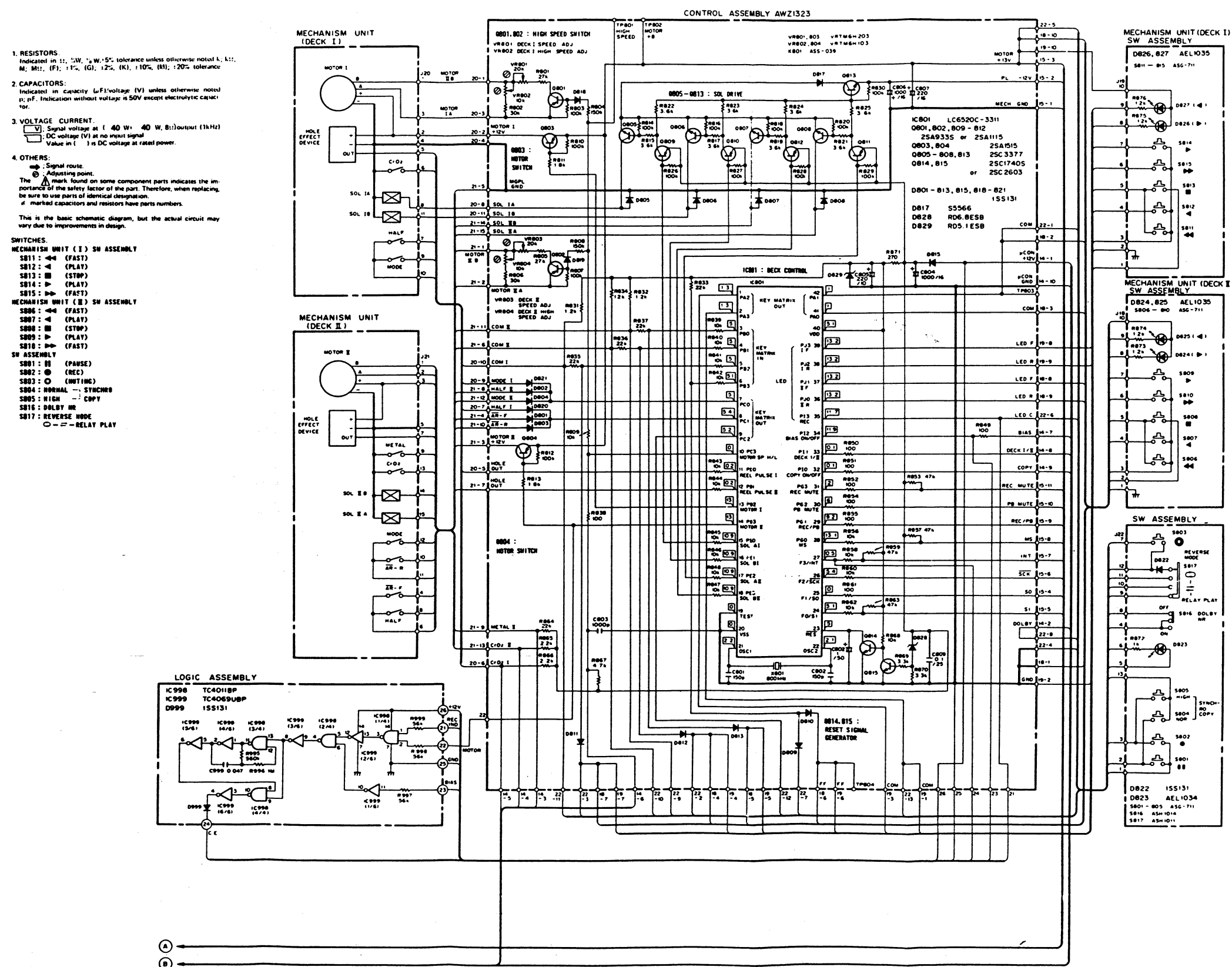
5

A

B

C

D



DC-X88Z

5.P.C. BOARDS CONNECTION DIAGRAM

NOTE

1. This P.C.B connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the following Table.

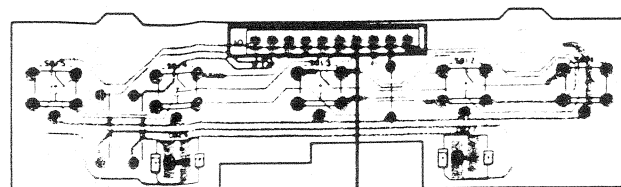
P.C.B. pattern diagram indication	Corresponding part symbol	Part Name
		Transistor
		Radiator type transistor
		Diode
		Resistor
		Capacitor (Polarity)
		Capacitor (Non-polarity)

Others

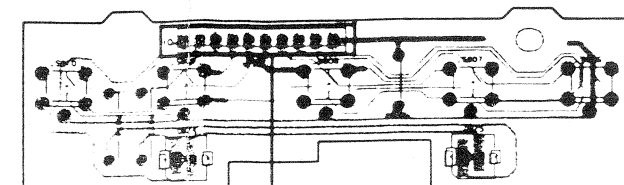
P.C.B. pattern diagram indication	Part Name
IC	IC
S	Switch
RY	Relay
L	Coil
F	Filter
VR	Variable resistor or Semi-fixed resistor

3. The capacitor terminal marked with ⊕ (double circles) shows negative terminal.
4. The diode terminal marked with ⊕ (double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.

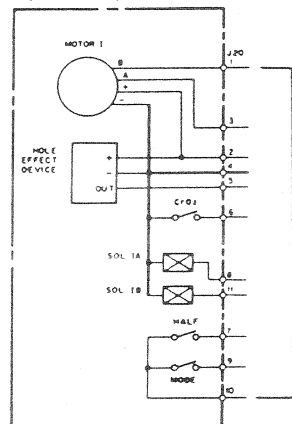
MECHANISM UNIT (DECK I)
SW ASSEMBLY



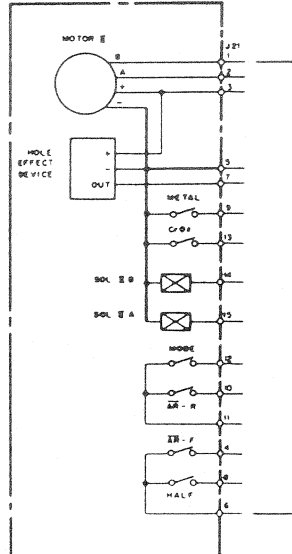
MECHANISM UNIT (DECK II)
SW ASSEMBLY



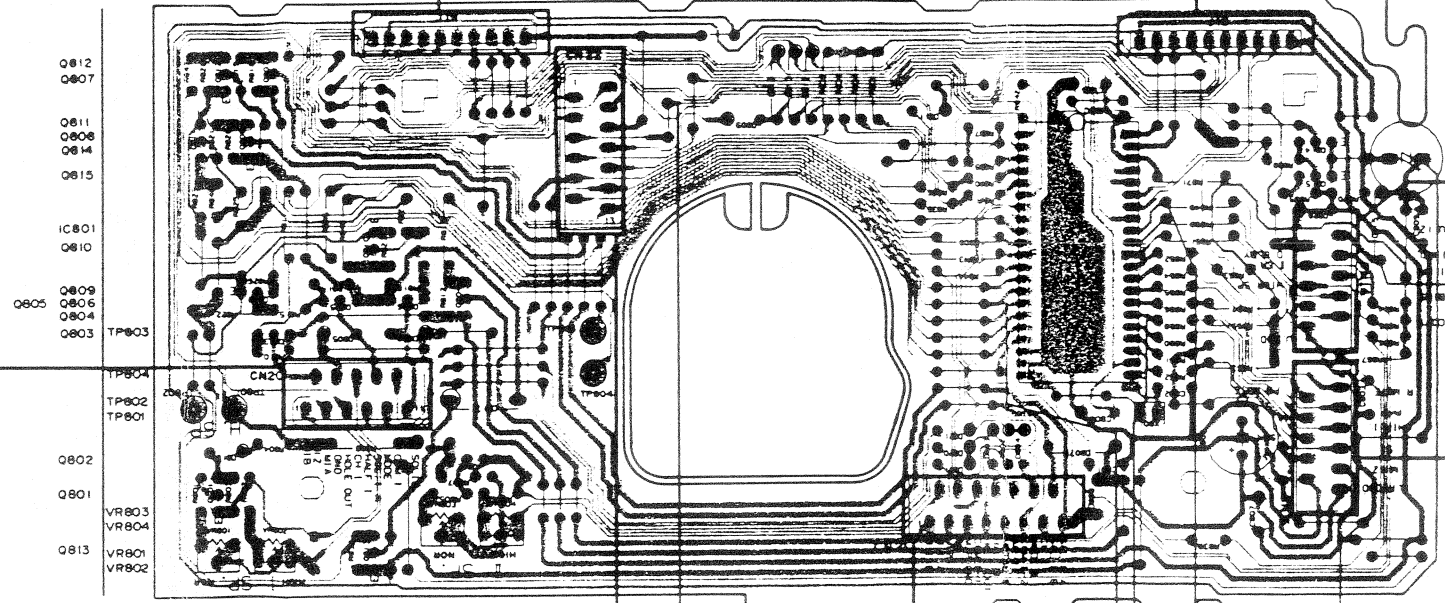
MECHANISM UNIT
(DECK I)



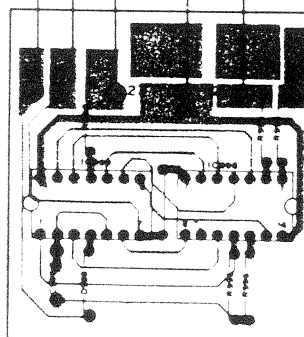
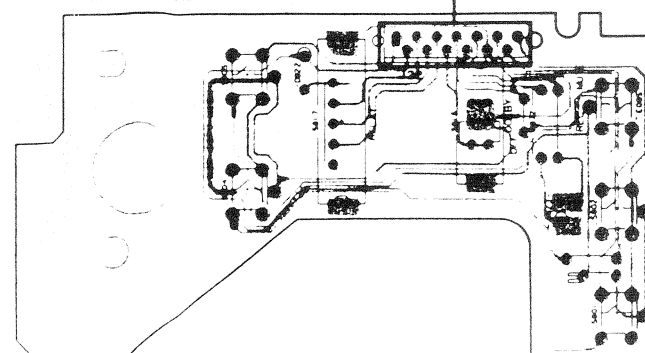
MECHANISM UNIT
(DECK II)



CONTROL ASSEMBLY AWZ1323



SW ASSEMBLY



LOGIC ASSEMBLY

1

2

3

4

5

6

TAPE ASSEMBLY AHZ1321

VR703
VR704
VR601
VR603
VR602
VR604

Q620 Q727
Q618 Q721 Q605
Q611 Q607
Q608 Q606

Q619 Q724 Q726
Q728
Q602

Q722 Q723
Q730 Q731 Q601
Q732

TP808

TP809

IC603

Q617 IC601

Q616 Q707 VR701
Q717 IC604

Q715 VR702

Q708

Q603
IC702 Q604

Q705

Q610
IC701 Q609

TP807
TP806
TP805

Q701
Q702

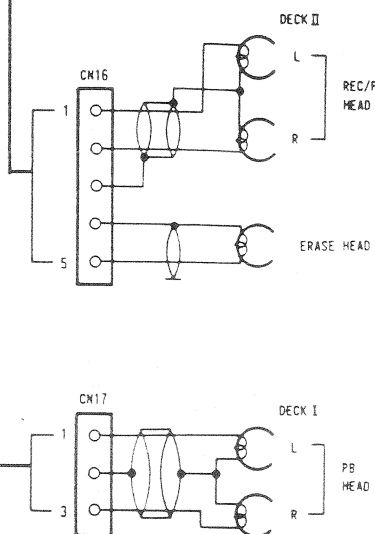
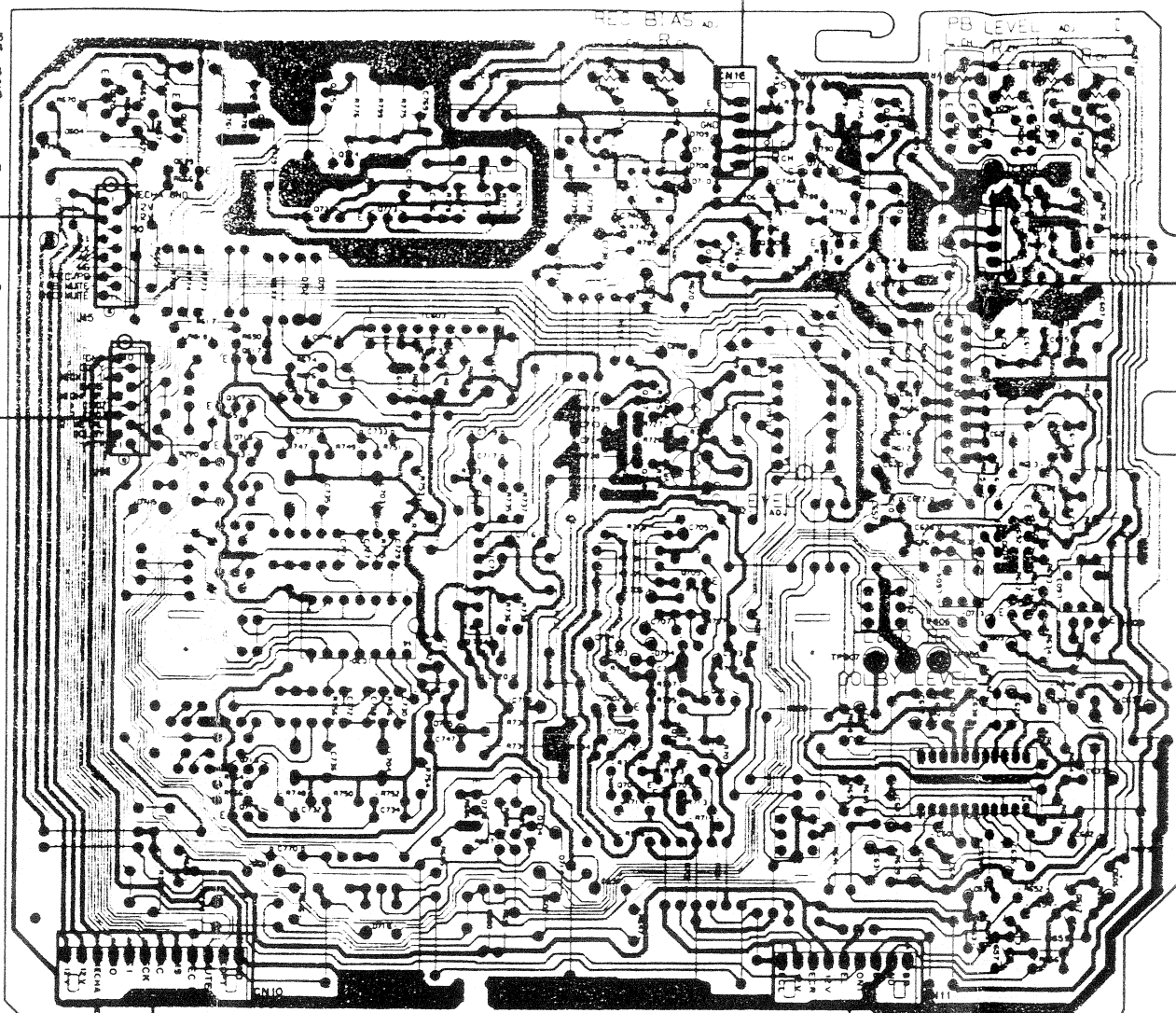
Q706

Q716 IC602

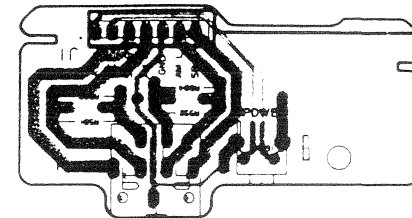
Q703
Q704
Q718 Q733
Q734

Q612

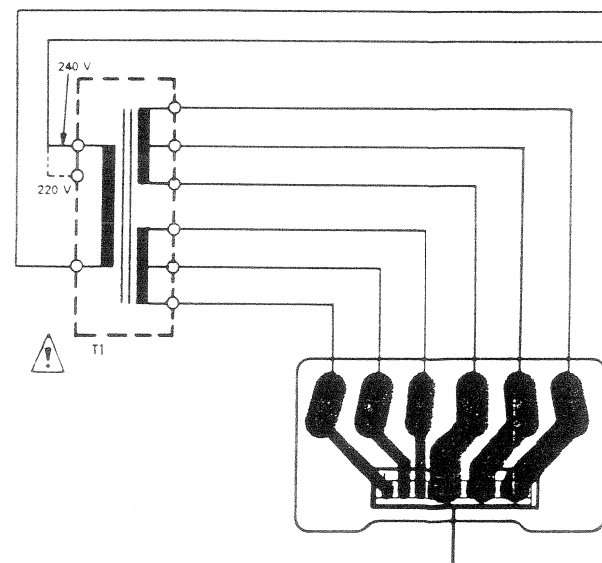
Q613



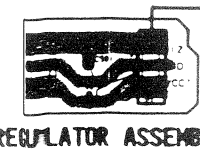
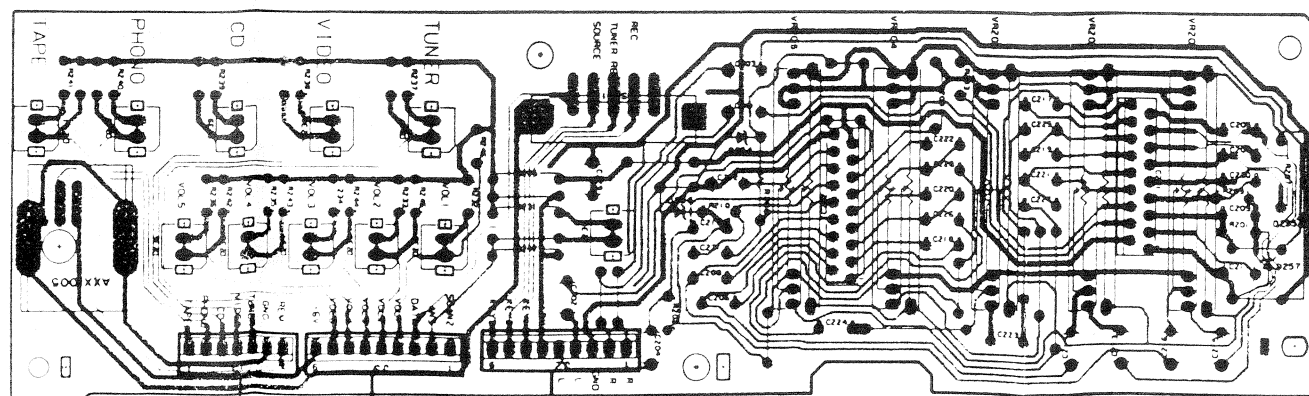
HEADPHONE ASSEMBLY



AC POWER CON

AC220V
240V
50/60Hz

G.E. ASSEMBLY



REGULATOR ASSEMBLY

1

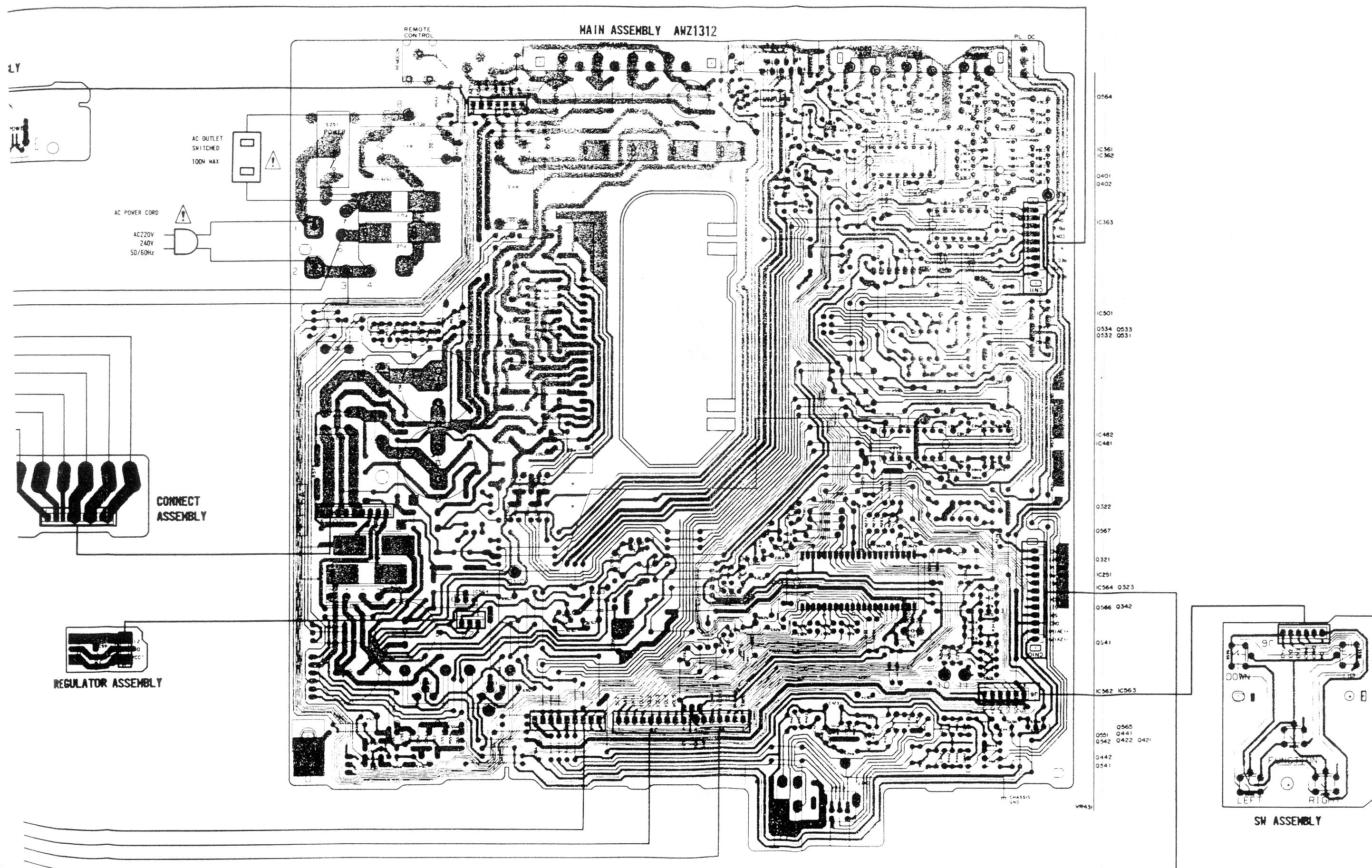
2

3

4

5

6



6. ELECTRICAL PARTS LIST

NOTES:

- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	56 × 10 ¹	561.....	RD1/4PS □ □ J
47kΩ	47 × 10 ³	473.....	RD1/4PS □ □ J
0.5Ω	0R5.....		RN2H □ □ K
1Ω	010.....		RS1P □ □ K

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	562 × 10 ¹	5621.....	RN1/4SR □ □ □ F
--------	-----------------------	-----------	-----------------

- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your parts Stock Control, the fast moving items are indicated with the marks $\star\star$ and \star .
 $\star\star$ GENERALLY MOVES FASTER THAN \star
- This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- Parts marked by "●" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Miscellaneous Parts

Mark	Symbol & Description	Part No.	Mark	Symbol & Description	Part No.
	MAIN assembly	AWZ1312	$\star\star$	IC363	TC4066BP
	G.E assembly	Non supply	$\star\star$	IC481	TC9154AP
	Headphone assembly	Non supply	$\Delta\star\star$	IC564	μ PC79M12H
	SW assembly	Non supply	$\Delta\star\star$	IC563	μ PC7912H
	REGULATOR assembly	Non supply	$\star\star$	Q564, Q565	2SA1515
	CONNECT assembly	Non supply	$\star\star$	Q322, Q323, Q341, Q541	2SA933S
	TAPE assembly	AWZ1321	$\star\star$	Q421	2SA933SLN
	CONTROL assembly	AWZ1323	$\star\star$	Q567	2SB560
	Mechanism unit (I)	Non supply	$\star\star$	Q321, Q342, Q531 - Q534, Q551	2SC1740S
	SW assembly		$\star\star$	Q401, Q402, Q422, Q441, Q442	2SC1740SLN
	Mechanism unit (II)	Non supply	$\star\star$	Q542, Q566	2SC3377
	SW assembly		$\Delta\star$	D561	RBV402
	SW assembly	Non supply	\star	D552, D553	RD5.1EB
	LOGIC assembly	Non supply	\star	D575, D576	RD6.2EB
			$\Delta\star$	D562	RB152
$\Delta\star$	T1 Power transformer	ATS1060	\star	D251 - D253, D301, D302,	1SS131
Δ	AC Socket (AC OUTLET)	AKP-509		D321 - D325, D341, D481, D531,	
$\Delta\star\star$	FU1, FU2 Fuse (T1.25A)	AEK-509		D541 - D543, D551, D554 - D557,	
$\Delta\star\star$	FU3, FU4 Fuse (T1.6A)	AEK-510		D566, D573, D574	
$\Delta\star\star$	FU5, FU6 Fuse (T2.5A)	AEK-512			
Δ	AC power cord	ADG-051			
Δ	Strain relief	AEC-882			

SWITCH AND RELAYS

Mark	Symbol & Description	Part No.
$\Delta\star\star$	S251 Push switch	ASG1007
$\star\star$	RY3 Relay	ASR-111
$\star\star$	RY2 Relay	ASR-515
$\star\star$	RY1 Relay	ASR-516

COILS

Mark	Symbol & Description	Part No.
	L251, L252 AF Choke coil (1 μ H)	ATH-133

MAIN Assembly (AWZ1312)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
$\star\star$	IC361, IC482	M5218P
$\Delta\star\star$	IC562	NJM78M13A
$\star\star$	IC251	PDE016
$\Delta\star\star$	IC501	STK4152-2SP
$\star\star$	IC362	TC4052BP
$\star\star$	IC364	ICP-N10

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
\star	VR703, VR704 Semi-fixed (100k)	VRTM6H104
\star	VR601 - VR604 Semi-fixed (20k)	VRTM6H203
\star	VR701, VR702 Semi-fixed (20k)	VRTM6V203
	R775, C776, C799	RD1/2PM □ □ □ J
	R621, R731, R732	RD1/4PM221J
	Other resistors	RD1/8PM □ □ □ J

OTHERS

Mark	Symbol & Description	Part No.
	9P socket	AKP-046

CONTROL Assembly (AWZ1323)
SEMICONDUCTORS

Mark	Symbol & Description	Part No.
$\star\star$	IC801	LC6520C-3311
$\star\star$	Q803, Q804	2SA1515
$\star\star$	Q801, Q802, Q809 - Q812	2SA933S
		(2SA1115)
$\star\star$	Q814, Q815	2SC1740S
		(2SC2603)
$\star\star$	Q805 - Q808, Q813	2SC3377
\star	D829	RD5.1ESB
\star	D828	RD6.8ESB
\star	D817	S5566
\star	D801 - D813, D815, D818 - D821	1SS131

CAPACITORS

Mark	Symbol & Description	Part No.
	C801, C802	CCCSL151J50
	C808	CEAS010M50
	C804, C806	CEAS102M16
	C805	CEAS221M10
	C807	CEAS221M16
	C803	CKCYF102Z50
	C809	CKCYX104M25

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
\star	VR802, VR804 Semi-fixed (10k)	VRTM6H103
\star	VR801, VR803 Semi-fixed (20k)	VRTM6H203
	R871	RD1/4PM271J
	Other resistors	RD1/8PM □ □ □ J

OTHERS

Mark	Symbol & Description	Part No.
\star	X801 Ceramic oscillator (800kHz)	ASS-039

Mechanism unit (I) SW Assembly
SEMICONDUCTORS

Mark	Symbol & Description	Part No.
\star	D826, D827	AEL1035

SWITCHES

Mark	Symbol & Description	Part No.
$\star\star$	S811 - S815 Tact switch	ASG-711

RESISTORS

Mark	Symbol & Description	Part No.
	R875, R876	RD1/4PM122J

Mechanism unit (II) SW Assembly
SEMICONDUCTORS

Mark	Symbol & Description	Part No.
\star	D824, D825	AEL1035

SWITCHES

Mark	Symbol & Description	Part No.
$\star\star$	S806 - S810 Tact switch	ASG-711

RESISTORS

Mark	Symbol & Description	Part No.
	R873, R874	RD1/4PM122J

SW Assembly
SEMICONDUCTORS

Mark	Symbol & Description	Part No.
\star	D823	AEL1034
\star	D822	1SS131

SWITCHES

Mark	Symbol & Description	Part No.
$\star\star$	S801 - S805 Tact switch	ASG-711
$\star\star$	S817 Slide switch	ASH1011
$\star\star$	S816 Slide switch	ASH1014

RESISTORS

Mark	Symbol & Description	Part No.
	R872	RD1/4PM102J

LOGIC Assembly
SEMICONDUCTORS

Mark	Symbol & Description	Part No.
$\star\star$	IC998	TC4011BP
$\star\star$	IC999	TC4069UBP
\star	D999	1SS131

CAPACITORS

Mark	Symbol & Description	Part No.
	C999	CKDYF473Z50

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	All resistors	RD1/8PM □ □ □ J

7. ADJUSTMENTS

Tape speed adjustment

1. Connect the frequency counter to the TP1 terminal (Dolby TP: R-ch) on the complex assembly.
2. Turn the tape switch on.
3. Mount the test tape STD-301 onto deck I.
4. Put the deck I into play mode and short-circuit between terminals TP801 and TP802 on the tape assembly. (STD-301 is play backed in double speed.)
5. Adjust with VR802 so that the playback signal frequency of deck I becomes $6020\text{Hz} \pm 10\text{Hz}$.
6. Release the short-circuit between terminals TP801 and TP802.
7. Put the deck I into play mode and adjust with VR801 so that the playback signal frequency becomes $3010\text{Hz} \pm 5\text{Hz}$.
Note: Be sure not to turn VR802 while performing the normal speed adjustment.
8. At this point, be sure to confirm that the wow and flutter are within 0.25% both in the normal speeds.
9. Mount the test tape STD-301 onto deck II.
10. Put the deck II into play mode and short-circuit between terminals TP801 and TP802 on the tape assembly. (STD-301 is play backed in double speed.)
11. Adjust with VR804 so that the playback signal frequency of deck II becomes $6020\text{Hz} \pm 10\text{Hz}$.
12. Release the short-circuit between terminals TP801 and TP802.
13. Put the deck II into play mode and adjust with VR803 so that the play back signal frequency of deck II becomes $3010\text{Hz} \pm 5\text{Hz}$.
(Note: Be sure not to turn VR804 while performing the normal speed adjustment.)
14. At this point, be sure to confirm that the wow and flutter are within 0.25% in the normal speeds.

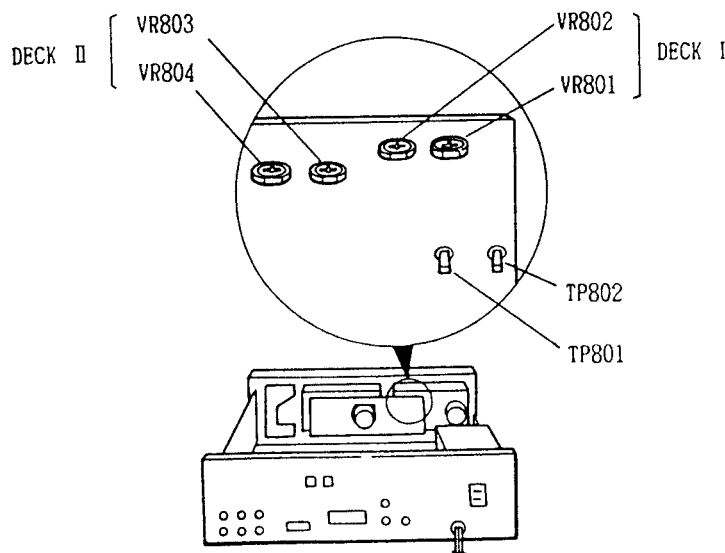


Fig. 7-1 Adjustment Point

Headphone Assembly SWITCH

Mark	Symbol & Description	Part No.
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★★	S591 Tact switch (POWER)	ASG-712
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RESISTORS

Mark	Symbol & Description	Part No.
------	----------------------	----------

	All resistors	RD1/2PM681J
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OTHERS

Mark	Symbol & Description	Part No.
------	----------------------	----------

	Mini jack (PHONES)	AKN1004
--	--------------------	---------

SW Assembly SWITCHES

Mark	Symbol & Description	Part No.
------	----------------------	----------

★★	S595-S599 Tact switch	ASG-711
----	-----------------------	---------

REGULATOR Assembly SEMICONDUCTOR

Mark	Symbol & Description	Part No.
------	----------------------	----------

★★	IC561	μPC7812H
----	-------	----------

CAPACITOR

Mark	Symbol & Description	Part No.
------	----------------------	----------

	C591	CEAS100M50
--	------	------------

CONNECT Assembly

The electrical parts of this assembly are not supplied.

TAPE Assembly (AWZ1321) SEMICONDUCTORS

Mark	Symbol & Description	Part No.
------	----------------------	----------

★★	IC603	BA335PT
★★	IC601	BA3416BL
★★	IC602	HA12086NT
★★	IC702	M5218LF
★★	IC701	M74LS05P

★★	IC604	TC4066BP
★★	Q722, Q723	2SA1515
★★	Q721, Q730, Q733	2SA933S (2SA1115)
★★	Q601-Q613, Q616-Q620, Q701-Q706, Q715-Q718, Q728, Q729, Q731, Q732, Q734	2SC1740S (2SC2603)

★★	Q724, Q725	2SC2603
★★	Q707, Q708	2SC2878
★★	Q726, Q727	2SK373
★	D705	RD5.1ESB
★	D712	S5566

★	D601-D606, D701-D704, D708-D711, D713-D716	1SS131
★	D706, D707	1S2471

TRASFORMER, COILS AND FILTERS

Mark	Symbol & Description	Part No.
------	----------------------	----------

L705, L706	Trap coil	ATM-037
L603, L604	Trap coil	ATM1001
L601, L602	Axial inductor	LAU221K
L707	Inductor	LTA102J
L703, L704	Inductor	LTA392J

F701, F702	Dolby filter	ATF-210
T701		ATX-043

CAPACITORS

Mark	Symbol & Description	Part No.
------	----------------------	----------

C768	(1500p)	ACE-133
C743, C744		CCCSL100D50
C611-C614, C713, C714		CCCSL101J50
C741, C742		CCCSL101K500
C763		CCCSL221J50

C601, C602		CCCSL271J50
C762		CEASR47M50
C642, C643		CEASR68M50
C647		CEASR1M50
C605, C606, C609, C610, C624, C625, C705, C708, C711, C712, C748		CEASO10M50

C636, C637, C701-C704, C707 C709, C710		CEAS100M50
C618, C644, C645, C737, C738		CEASR22M50
C617, C630, C631, C653, C654		CEAS2R2M50
C607, C608, C633		CEAS220M16
		CEAS221M10

C623, C632		CEAS221M16
C649		CEAS3R3M50
C721, C722		CEAS330M16
C619, C620, C628, C629, C634, C635, C769		CEAS4R7M50

C650, C706, C715, C716, C747, C761		CEAS470M16
C651, C652, C770		CKCYB102K50
C603, C604		CKCYB471K50
C739, C740, C745, C746, C780		CKCYB681K50

C646		CKCYF473Z50
C638, C639, C765, C766		CQMA103J50
C767		CQMA123K250
C640, C641, C729, C730, C764		CQMA153J50
C717, C718		CQMA182J50

C626, C627		CQMA183J50
C731, C732		CQMA223J50
C621, C622		CQMA273J50
C615, C616		CQMA333J50
C735, C736		CQMA472J50

C733, C734		CQMA393J50
C648		CQMA473K50
C727, C728		CQMA562J50
C771, C772		CQMA681J50
C719, C720		CQMA683J50

9.3 ELECTRICAL PARTS LIST

△ ES:

- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	56×10^1	561.....	RD1/4PS	5	6	1	J
47kΩ	47×10^3	473.....	RD1/4PS	4	7	3	J
0.5Ω	0R5.....		RN2H	0	5		K
1Ω	010.....		RS1P	0	1	0	K

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	562×10^1	5621.....	RN1/4SR	5	6	2	1	F
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- The △ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your parts Stock Control, the fast moving items are indicated with the marks ★ ★ and ★.
- ★ ★ GENERALLY MOVES FASTER THAN ★
- This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- Parts marked by "●" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Parts List

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC01	PD5048
★★	Q01	2SC2021
★★	Q02	2SC2673
★	D01—D05	1SS133HV
★	D07	SE303A

FILTER

Mark	Symbol & Description	Part No.
	MF01	CSB480EP

CAPACITORS

Mark	Symbol & Description	Part No.
	C01, C02	CCCSL101J50
	C03	CKCYB472K50
	C04	CEAS470M6R3

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	R01—R05	RD1/8PM □ □ □ J

Electrical system adjustment

Prior to the electrical system adjustment, be sure to confirm the following items.

1. The mechanical adjustment should be completed.
2. Perform cleaning of the head and the demagnetization of head with the head eraser.
3. The level during measurement is determined at $0\text{dBv} = 1\text{V}$.
4. The specified tape should be used for adjustment.
Since the test tape has A side and B side, use the A side with label.
STD-331B: For playback system adjustment
STD-608A: Normal blank tape
STD-620: CrO_2 blank tape
STD-610: Metal blank tape
5. Prepare the following measuring instruments.
AC millivoltmeter, low frequency oscillator, attenuator, and oscilloscope.
6. For the adjustment, perform both L and R channels unless otherwise specified.
7. Turn the Dolby NR switch to off unless otherwise specified.

8. Prior to the adjustment, be sure to perform aging of the set for several minutes. Especially prior to entering the adjustment of the recording and playback frequency characteristics, aging should be performed in REC/PLAY mode for 3 to 5 minutes.
9. The adjustment should be performed in accordance with the adjustment order. If the order is not kept, it may cause the failure of the complete adjustment which induces the inferior function of the unit.

Deck I

1. Head azimuth adjustment
2. Playback level adjustment

Deck II

1. Head azimuth adjustment
2. Playback level adjustment
3. Adjustment of recording and playback frequency characteristics
4. Adjustment of recording level

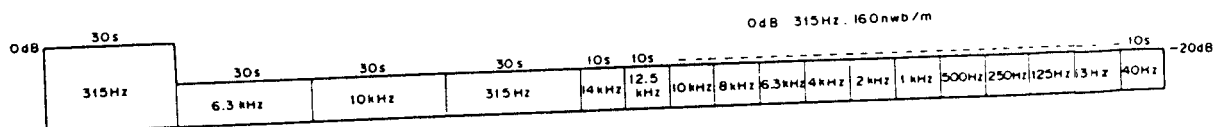


Fig. 7-2 Test tape STD-331B

Adjustment of Deck I

* This deck is provided with an auto-tape-selector mechanism.

1. Head azimuth adjustment * (Note) Do not select FWD and REV with the screwdriver being kept inserted.

Procedure	Tape selector (AUTO)	Mode	Input signal/test tape	Adjusting point	Measuring point	Adjustment value	Remark
1	NORM	PLAY	Play back 10kHz/-20dB on test tape STD-331B	Head azimuth adjusting screw (Fig.7-4)	TP Lch TP Rch	Maximum playback signal level	After completion, lock the screw.

2. Playback level adjustment * Perform this adjustment precisely since this adjustment is Dolby level setting during playback.

Procedure	Tape selector (AUTO)	Mode	Input signal/test tape	Adjusting point	Measuring point	Adjustment value	Remark
1	NORM	PLAY	Play back 315Hz/0dB on test tape STD-331B	VR603 (L) VR604 (R)	TP Lch TP Rch	-13.5dBv	

Adjustment of Deck II

* This deck is provided with an auto-tape-selector mechanism.

1. Head azimuth adjustment * (Note) Do not select FWD and REV with the screwdriver being kept inserted.

Procedure	Tape selector (AUTO)	Mode	Input signal/test tape	Adjusting point	Measuring point	Adjustment value	Remark
1	NORM	PLAY	Play back 315Hz/0dB on test tape STD-331B	Head azimuth adjusting screw (Fig.7-4)	TP Lch TP Rch	Maximum playback signal level	After completion, lock the screw.

2. Playback level adjustment * Perform this adjustment precisely since this adjustment is Dolby level setting during playback.

Procedure	Tape selector (AUTO)	Mode	Input signal/test tape	Adjusting point	Measuring point	Adjustment value	Remark
1	NORM	PLAY	Play back 315Hz/0dB on test tape STD-331B	VR601 (L) VR602 (R)	TP Lch TP Rch	-13.5 dBv	

3. Adjustment of recording and playback frequency characteristics * This adjustment is performed in order to adjust the recording bias. Therefore, caution should be exercised not to worsen the distortion ratio due to under bias.

Procedure	Tape selector (AUTO)	Mode	Input signal/test tape	Adjusting point	Measuring point	Adjustment value	Remark
1	NORM	REC	STD-608A and put into REC mode.	Bias oscillator frequency T701	Between (A) and (B) in Fig.7-3	Confirm that the oscillation frequency 105 kHz \pm 1 kHz.	When it is not within the standard, put it into the standard by adjusting T701.
2	NORM	REC	Apply the signal of 315Hz to the CD terminal and turn the CD switch on.	Input signal level	TP Lch TP Rch	-33.5 dBv	
3	NORM	REC/PLAY	Record and play back 315Hz and 10kHz on test tape STD-608	VR703 (L) VR704 (R)	TP Lch TP Rch	Repeat recording and playback, and compensate so that the playback level of 10kHz against 315Hz becomes 0 \pm 0.5dB.	

* Select the test tape, tape selector, and Dolby NR switch and satisfy the frequency characteristic zone as shown in Figs. 7-5 and 7-8.

4. Recording level adjustment * Set the graphic equalizer and balance volume to the center and the mike mixing volume to the source side.

Procedure	Tape selector (AUTO)	Mode	Input signal/test tape	Adjusting point	Measuring point	Adjustment value	Remark
1	NORM	REC	Apply the signal of 315Hz to the CD terminal and turn the CD switch on.	Input signal level	TP Lch TP Rch	-13.5dBv	
2	NORM	REC/PLAY	Record and play back 315Hz to the test tape STD-608A.	VR701 (L) VR702 (R)	TP Lch TP Rch	Repeat recording and playback, and compensate so that the playback level of 315Hz becomes -13.5 dBv	
3	CrO ₂	REC/PLAY	Record and play back 315Hz to the test tape STD-620.		TP Lch TP Rch	Confirm that the playback level of 315Hz becomes -13.5dBv (\pm 2.0dB)	
4	METAL	REC/PLAY	Record and play back 315Hz to the test tape STD-610.		TP Lch TP Rch	Confirm that the playback level of 315Hz becomes -13.5dBv (\pm 2.0dB)	

Note: If it is not set in REC/PLAY mode, there will be no signal to the TP terminal.

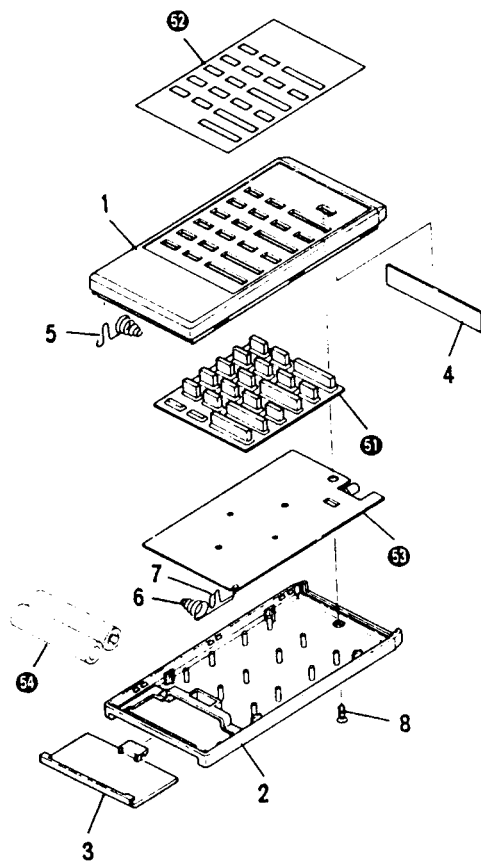
(In REC PAUSE mode, there is no signal to TP.)

9. REMOTE CONTROL

9.1 EXPLODED VIEW AND PARTS LIST

NOTES:

- Parts without part number cannot be supplied.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.
- ★★ **GENERALLY MOVES FASTER THAN ★**
This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- Parts marked by "●" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

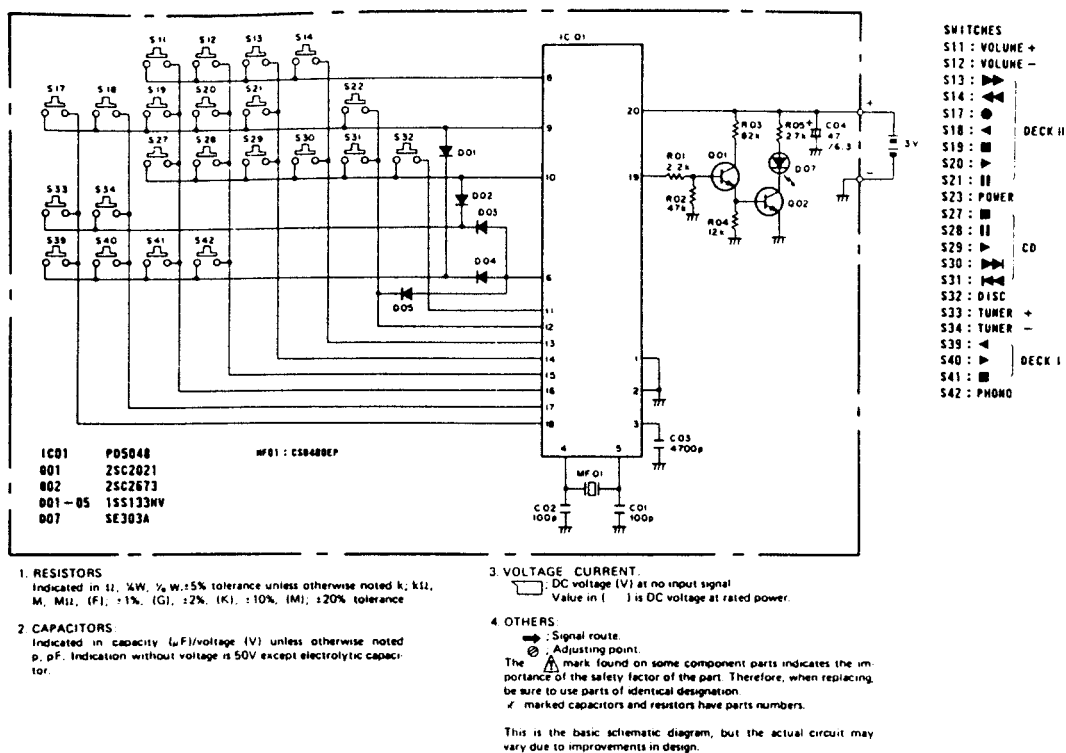


Parts List

Mark	No.	Part no.	Description
	1	AZA1053	Case (A)
	2	AZA1054	Case (B)
	3	AZA1055	Case (C)
	4	AZA1056	Filter
	5	AZK1042	Terminal (A)
	6	AZK1043	Terminal (B)
	7	AZK1044	Terminal (C)
	8	AZB1057	Screw
	51		Rubber switch
	52		Name plate
	53		P.C. Board
	54		Battery

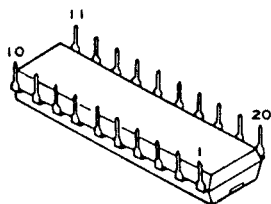
9.2 SCHEMATIC DIAGRAM AND P.C. BOARD PATTERN

SCHEMATIC DIAGRAM

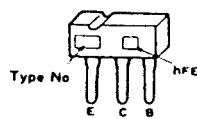


External Appearance of Transistors and IC

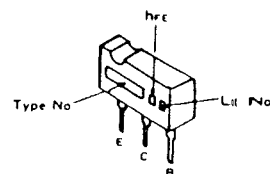
PD5048



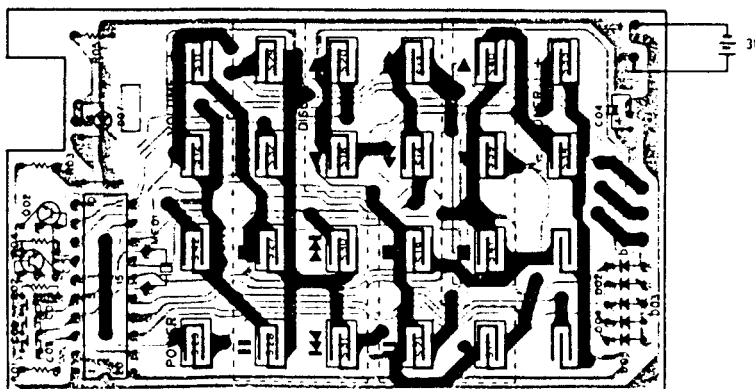
2SC2021



2SC2673



P. C. BOARD PATTERN



9.3 ELECTRICAL PARTS LIST

△ ES:

- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	56×10^1	561.....	RD1/4PS	5	6	1	J
47kΩ	47×10^3	473.....	RD1/4PS	4	7	3	J
0.5Ω	0R5.....		RN2H	0	5		K
1Ω	010.....		RSIP	0	1	0	K

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	562×10^1	5621.....	RN1/4SR	5	6	2	1	F
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- This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- Parts marked by "●" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Parts List

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC01	PD5048
★★	Q01	2SC2021
★★	Q02	2SC2673
★	D01—D05	1SS133HV
★	D07	SE303A

FILTER

Mark	Symbol & Description	Part No.
	MF01	CSB480EP

CAPACITORS

Mark	Symbol & Description	Part No.
	C01, C02	CCCSL101J50
	C03	CKCYB472K50
	C04	CEAS470M6R3

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	R01—R05	RD1/8PM□□□J